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For Il Mondo

Say it with a graph -- progress and hazard in human health

Figure 1 is the change in life-expectancy (at birth, for the United States) during this century. With exceptions to be noted, it is probably representative of the industrialized world.

Its most prominent feature is overall improvement, from 47 years in 1900 to 76.1 at present. The 1900 figure is probably not very different from the experience of upper class Europe from Roman times through the industrial revolution. The improvement, 30 years per century, is an index of social welfare, attributable in comparable measure to medical and sanitary technology - let us say to knowledge - and to the achievement and use of affluence. This can also be seen in figure 2. (World Bank) which plots life expectancy by per capita income in 4 different epochs. The detail of figure 2 also shows that countries with similar resources may diverge in health outcomes. This may be a measure of national and personal policies in life style, diet, smoking as well as medical technologies. Conceivably, innate genetic differences play some role; but the aggregate figures also conceal internal disparities in the distribution of wealth and of environmental insults.

Closer examination of Figure 1 also shows a steeper average slope for 1900-1950: about 40 years per century, with a levelling off thereafter. Figure 3. substantiates that the conquest of infectious disease dominates the interpretation of that slope. From other sources, we can infer that about half the improvement belongs to perinatal health infant deaths related to infection were often likely to be attributed otherwise. Much of the improvement even preceded the development of vaccines and antibiotics, but reflected the introduction of scientific principles of microbiology into public health practice: assurance of food and water safety, and sanitary measures in homes and hospitals.

The 1900-1950 epoch is also notable for its jaggedness -- presumably episodic epidemics -- and especially for the downward spike of 1918. This is the great "Spanish influenza" pandemic, a misnomer as it more likely originated in the farms of the American midwest. The viciousness of that strain is not yet understood; but it accounted for a half-million American lives, and at minimum 20 million world-wide: a match for the traumatic casualties of World War I. It should be a matter of great concern, before we retire to the complacency of affluence, whether such episodes may recur. For many years, southern China has been seen as the likeliest site of influenza virus evolution; and it is gratifying that the current outbreak of avian flu in HongKong is being given the most avid expert attention by world-wide health authorities. The world wide health picture is much like that of the U.S. in 1920, with TB and malaria resurgent in many countries, and many other new viruses emergent.

Since 1950, we observe a saddle to about 1970: simplistically stated, this is an epidemic of cardiovascular disease - perhaps connected with postwar dietary affluence and smoking - and gradually mitigated thereafter by self-consciousness about lifestyle, perhaps prophylactic

intakes like aspirin, and the high technology of care of coronary disease by medical and surgical measures.

A contemporary warning: the premonitory upward blip in infectious disease from the mid-80's (Fig. 3) -- about half related to HIV, the rest to nosocomial infection, drug-resistant bacteria, and a medley of other emergent conditions. For intelligent responders, this should be a signal to mobilize ourselves globally to prevent another acute catastrophe like 1918; the extended one since 1981 (HIV) is a sufficient omen.

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Fig. 1 == Fig 1. of EID article -- Life expectancy in the US

Fig. 2 == World Bank report, Life expectancy in various countries, epochs 1900, 1930, 1960, 1990 -- I faxed you

Fig. 3 == Fig 2 of EID article -- Trends in infectious disease mortality